ETSI TS 132 667 V7.1.0 (2009-01)

Technical Specification

Digital cellular telecommunications system (Phase 2+);
Universal Mobile Telecommunications System (UMTS);
LTE;
Telecommunication management;
Configuration Management (CM);
Kernel CM Integration Reference Point (IRP):
SOAP Solution Set (SS)
(3GPP TS 32.667 version 7.1.0 Release 7)

Reference
RTS/TSGS-0532667v710

Keywords
GSM, UMTS

ETSI

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Foreword

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The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under http://webapp.etsi.org/key/queryform.asp.

Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
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  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

The present document is part of a TS-family covering the 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; as identified below:

32.661: "Configuration Management (CM); Kernel CM; Requirements".

32.662: "Configuration Management (CM); Kernel CM; Information Service (IS)".

32.663: "Configuration Management (CM); Kernel CM Integration Reference Point (IRP): Common Object Request Broker Architecture (CORBA) Solution Set (SS)".

32.665 Configuration Management (CM); Kernel CM Integration Reference Point (IRP): eXtensible Markup Language (XML) definitions.

32.667: "Configuration Management (CM); Kernel CM Integration Reference Point (IRP): SOAP solution set".

Configuration Management (CM), in general, provides the operator with the ability to assure correct and effective operation of the 3G network as it evolves. CM actions have the objective to control and monitor the actual configuration on the Network Elements (NEs) and Network Resources (NRs), and they may be initiated by the operator or by functions in the Operations Systems (OSs) or NEs.

CM actions may be requested as part of an implementation programme (e.g. additions and deletions), as part of an optimisation programme (e.g. modifications), and to maintain the overall Quality of Service (QoS). The CM actions are initiated either as single actions on single NEs of the 3G network, or as part of a complex procedure involving actions on many resources/objects in one or several NEs.

1 Scope

The purpose of the present document is to define the mapping of the Kernel CM IRP: IS (3GPP TS 32.662 [4]) to the protocol specific details necessary for implementation of this IRP in a SOAP/WSDL environment.

This Solution Set specification is related to 3GPP TS 32.662 (V7.0.x).

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

[2] 3GPP TS 32.102: "Telecommunication management; Architecture".

[3] 3GPP TS 32.600: "Telecommunication management; Configuration Management (CM); Concept and high-level requirements".

[4] 3GPP TS 32.662: "Telecommunication management; Configuration Management (CM); Kernel CM; Information Service (IS)".

[5] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[6] 3GPP TS 32.311: "Telecommunication management; Generic Integration Reference Point (IRP) management; Information Service (IS)".

[7] 3GPP TS 32.172: "Telecommunication management; Subscription Management (SuM) IRP; Network Resources Model (NRM)"

[8] 3GPP TS 32.317: "Telecommunication management; Generic Integration Reference Point (IRP) management; SOAP solution set".

[9] 3GPP TS 32.307: "Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): SOAP solution set".

[10] W3C SOAP 1.1 specification (http://www.w3.org/TR/2000/NOTE-SOAP-20000508/)

[11] W3C WSDL 1.1 specification (http://www.w3.org/TR/2001/NOTE-wsdl-20010315)

[12] W3C XPath 1.0 specification (http://www.w3.org/TR/1999/REC-xpath-19991116)

[13] WS-I Basic Profile Version 1.1 (http://www.ws-i.org/Profiles/BasicProfile-1.1-2004-08-24.html)

[14] W3C SOAP 1.2 specification (http://www.w3.org/TR/soap12-part1/)

[15] 3GPP TS 32.665: "Telecommunication management; Configuration Management (CM); Kernel CM; eXtensible Markup Language (XML) definition".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TS 32.101 [1], 3GPP TS 32.102 [2], 3GPP TS 32.600 [3] and 3GPP TS 32.662 [4] apply.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

DN	Distinguished Name
IRP	Integration Reference Point
IS	Information Service
MO	Managed Object
MOC	Managed Object Class
NRM	Network Resource Model
SS	Solution Set
WSDL	Web Service Description Language
WS-I	Web Services Interoperability Organization

4 IRP document version number string

The IRP document version number (sometimes called "IRPVersion" or "SS version number") string is used to identify this specification. The string is derived using a rule described in 3GPP TS 32.311 [6]. The value of this string is defined by a constant in annex A.

This string (or sequence of strings, if more than one version is supported) is returned in `getIRPVersion` method and is carried in the first field of the notification header of all notifications related to this IRP.

5 Architectural features

5.1 General

The overall architectural feature of Kernel Configuration Management IRP is specified in 3GPP TS 32.662 [4].
This clause specifies features that are specific to the SOAP SS.

The SOAP 1.1 specification [10] and WSDL 1.1 specification [13] are supported.

The SOAP 1.2 specification [14] is supported optionally.

This specification uses "document" style in WSDL file.

This specification uses "literal" encoding style in WSDL file.

This specification uses a number of namespace prefixes throughout that are listed in Table 5.1.

Table 5.1: Prefixes and Namespaces used in this specification

PREFIX	NAMESPACE
http	http://schemas.xmlsoap.org/wsdl/http/
soap	http://schemas.xmlsoap.org/wsdl/soap/
SOAP-ENV	http://schemas.xmlsoap.org/soap/envelope/
SOAP-ENC or soapenc	http://schemas.xmlsoap.org/soap/encoding/
xs or xsd	http://www.w3.org/2001/XMLSchema
xsi	http://www.w3.org/2001/XMLSchema-instance
kernelCMIRPSystem	http://www.3gpp.org/ftp/Specs/archive/32_series/32.667/schema/32667-710/KernelCMIRPSystem
kernelCMIRPData	http://www.3gpp.org/ftp/Specs/archive/32_series/32.667/schema/32667-710/KernelCMIRPData
ntfIRPSystem	http://www.3gpp.org/ftp/Specs/archive/32_series/32.307/schema/32307-710/notification/NotificationIRPNtfSystem
genericIRPSystem	http://www.3gpp.org/ftp/Specs/archive/32_series/32.317/schema/32317-710/GenericIRPSystem

The WSDL structure is like Figure 5.1:

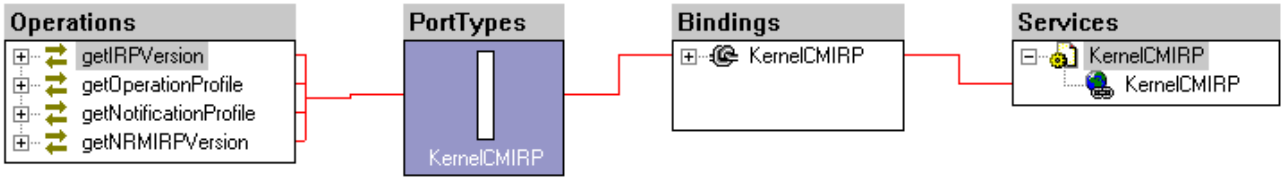

Figure 5.1: kernelCM IRP SOAP Solution Set WSDL structure

5.2 Notifications

Notifications are sent according to the Notification IRP: SOAP SS (see 3GPP TS 32.307 [9]).

The contents of the Kernel CM IRP notifications are defined in KernelCM IRP XML definition [15].

5.3 Syntax for Distinguished Names and Versions

The format of a Distinguished Name is defined in 3GPP TS 32.300 [5].

The version of this IRP is represented as a string (see also clause 4).

6 Mapping

6.1 General mappings

The IS parameter name managedObjectInstance is mapped into DN.

Attributes modelling associations as defined in the NRM (here also called "reference attributes") are in this SS mapped to attributes. The names of the reference attributes in the NRM are mapped to the corresponding attribute names in the MOC. When the cardinality for an association is 0..1 or 1..1 the datatype for the reference attribute is defined as an MOReference. The value of an MO reference contains the distinguished name of the associated MO. When the cardinality for an association allows more than one referred MO, the reference attribute will be of type MOReferenceSet, which contains a sequence of MO references.

If a reference attribute is changed, an AttributeValueChange notification is emitted.

6.2 Operation and Notification mapping

The Kernel CM IRP: IS (see 3GPP TS 32.662 [4]) defines semantics of operation and notification visible across the Kernel Configuration Management IRP. The following table in this subclause indicates mapping of these operations and notifications to their equivalents defined in this SS.

Table 6.2: Mapping from IS Notification/Operation to SS equivalents

IS Operation/ notification (3GPP TS 32.662 [4])	SS Operation	Qualifier
getNRMIRPVersion	getNRMIRPVersion	M
notifyObjectCreation	ntfIRPSystem:notify (note 2)	O
notifyObjectDeletion	ntfIRPSystem:notify (note 2)	O
notifyAttributeValueChange	ntfIRPSystem:notify (note 2)	O
notifyCMSynchronizationRecommended	ntfIRPSystem:notify (note 2)	O
notifyStateChange	ntfIRPSystem:notify (note 2)	O
getIRPVersion(see note 1)	getIRPVersion	M
getOperationProfile(see note 1)	getOperationProfile	O
getNotificationProfile(see note 1)	getNotificationProfile	O
NOTE 1: This operation is of IOC ManagedGenericIRP specified in [10]. The IOC KernelCmIRP of [4] inherits from it.		
NOTE 2: The IS equivalent is mapped into parameters of ntfIRPSystem::notify.		

6.3 Operation parameter mapping

The Kernel CM IRP: IS (3GPP TS 32.662 [4]) defines semantics of parameters carried in operations across the Kernel Configuration Management IRP. The tables below show the mapping of these parameters, as per operation, to their equivalents defined in this SS.

6.3.1 Operation `getNRMIRPVersion`

6.3.1.1 Input parameters

None.

Here is the XML schema fragment of the getNRMIRPVersion request:

```
<!-- getNRMIRPVersion Request -->
<element name="getNRMIRPVersion">
</element>
```

6.3.1.2 Output parameters

Table 6.3.1.2: Mapping from IS getNRMIRPVersion output parameters to SS equivalents

IS Operation parameter	SS Operation parameter	Qualifier
versionNumberList	kernelCMIRPData:VersionNumberSetType versionNumberSet	M
vSEVersionNumberList	kernelCMIRPData:VersionNumberSetType vSEVersionNumberList	M
status	kernelCMIRPData:getNRMIRPVersionFault	M

Here is the XML schema fragment of the getNRMIRPVersion response:

```
<!-- getNRMIRPVersion Response -->
<element name="getNRMIRPVersionResponse">
    <complexType>
        <sequence>
                <element name="versionNumberList" type="kernelCMIRPData:VersionNumberSetType"/>
                <element name="vSEVersionNumberList" type="
    kernelCMIRPData:VersionNumberSetType"/>
        </sequence>
    </complexType>
</element>
```

6.3.1.3 Fault definition

```
<!-- getNRMIRPVersion Fault -->
<element name="getNRMIRPVersionFault">
    <complexType>
        <choice>
            <element name="getNRMIRPVersionFault" type="string"/>
        </choice>
    </complexType>
</element>
```

Annex A (normative): WSDL Specification

```
<?xml version="1.0" encoding="UTF-8"?>
<definitions xmlns="http://schemas.xmlsoap.org/wsdl/"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:http="http://schemas.xmlsoap.org/wsdl/http/" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:genericIRPSystem="http://www.3gpp.org/ftp/Specs/archive/32_series/32.317/schema/32317-
710/GenericIRPSystem"
xmlns:kernelCMIRPSystem="http://www.3gpp.org/ftp/Specs/archive/32_series/32.667/schema/32667-
710/KernelCMIRPSystem"
xmlns:kernelCMIRPData="http://www.3gpp.org/ftp/Specs/archive/32_series/32.667/schema/32667-
710/KernelCMIRPData"
targetNamespace="http://www.3gpp.org/ftp/Specs/archive/32_series/32.667/schema/32667-
710/KernelCMIRPSystem">
    <import namespace="http://www.3gpp.org/ftp/Specs/archive/32_series/32.317/schema/32317-
710/GenericIRPSystem" location="http://www.3gpp.org/ftp/Specs/archive/32_series/32.317/schema/32317-
710-wsdl.zip"/>
    <types>
        <schema
targetNamespace="http://www.3gpp.org/ftp/Specs/archive/32_series/32.667/schema/32667-
710/KernelCMIRPData" xmlns="http://www.w3.org/2001/XMLSchema">
            <!-- getNRMIRPVersion Request -->
            <element name="getNRMIRPVersion">
            </element>
            <!-- getNRMIRPVersion Response -->
            <element name="getNRMIRPVersionResponse">
                <complexType>
                    <sequence>
                        <element name="versionNumberList"
type="kernelCMIRPData:VersionNumberSetType"/>
                        <element name="vSEVersionNumberList"
type="kernelCMIRPData:VersionNumberSetType"/>
                    </sequence>
                </complexType>
            </element>
            <!-- getNRMIRPVersion Fault -->
            <element name="getNRMIRPVersionFault">
                <complexType>
                    <choice>
                        <element name="getNRMIRPVersionFault" type="string"/>
                    </choice>
                </complexType>
            </element>
         <element name="OperationNotSupportedFault" type="string"/>
         <element name="InvalidParameterFault" type="string"/>
         <simpleType name="VersionNumberType">
            <restriction base="string"/>
         </simpleType>
         <complexType name="VersionNumberSetType">
            <sequence>
               <element name="versionNumber" type="kernelCMIRPData:VersionNumberType"
maxOccurs="unbounded"/>
            </sequence>
         </complexType>
         <complexType name="ParameterSetType">
            <sequence>
               <element name="parameterName" type="string" maxOccurs="unbounded"/>
            </sequence>
         </complexType>
         <complexType name="OperationType">
            <sequence>
               <element name="operationName" type="string"/>
               <element name="parameterSet" type="kernelCMIRPData:ParameterSetType"/>
            </sequence>
         </complexType>
         <complexType name="OperationSetType">
            <sequence>
               <element name="operation" type="kernelCMIRPData:OperationType"
maxOccurs="unbounded"/>
            </sequence>
         </complexType>
         <complexType name="NotificationType">
```

```
            <sequence>
               <element name="notificationName" type="string"/>
               <element name="parameterSet" type="kernelCMIRPData:ParameterSetType"/>
            </sequence>
         </complexType>
         <complexType name="NotificationSetType">
            <sequence>
               <element name="notification" type="kernelCMIRPData:NotificationType"
maxOccurs="unbounded"/>
            </sequence>
         </complexType>

        </schema>
    </types>
    <message name="getNRMIRPVersionRequest">
        <part name="parameter" element="kernelCMIRPData:getNRMIRPVersion"/>
    </message>
    <message name="getNRMIRPVersionResponse">
        <part name="parameter" element="kernelCMIRPData:getNRMIRPVersionResponse"/>
    </message>
    <message name="getNRMIRPVersionFault">
        <part name="parameter" element="kernelCMIRPData:getNRMIRPVersionFault"/>
    </message>


    <portType name="KernelCMIRP">
        <operation name="getIRPVersion">
            <input message="genericIRPSystem:getIRPVersionRequest"/>
            <output message="genericIRPSystem:getIRPVersionResponse"/>
            <fault name="getIRPVersionFault" message="genericIRPSystem:getIRPVersionFault"/>
        </operation>
        <operation name="getOperationProfile">
            <input message="genericIRPSystem:getOperationProfileRequest"/>
            <output message="genericIRPSystem:getOperationProfileResponse"/>
            <fault name="getOperationProfileFault"
message="genericIRPSystem:getOperationProfileFault"/>
        </operation>
        <operation name="getNotificationProfile">
            <input message="genericIRPSystem:getNotificationProfileRequest"/>
            <output message="genericIRPSystem:getNotificationProfileResponse"/>
            <fault name="getNotificationProfileFault"
message="genericIRPSystem:getNotificationProfileFault"/>
        </operation>
        <operation name="getNRMIRPVersion">
            <input message="kernelCMIRPSystem:getNRMIRPVersionRequest"/>
            <output message="kernelCMIRPSystem:getNRMIRPVersionResponse"/>
            <fault name="getNRMIRPVersionFault" message="kernelCMIRPSystem:getNRMIRPVersionFault"/>
        </operation>

    </portType>
    <binding name="KernelCMIRP" type="kernelCMIRPSystem:KernelCMIRP">
        <soap:binding style="document" transport="http://schemas.xmlsoap.org/soap/http"/>
        <operation name="getIRPVersion">
            <soap:operation
soapAction="http://www.3gpp.org/ftp/Specs/archive/32_series/32.667/schema/32667-710/getIRPVersion"/>
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="getIRPVersionFault">
                <soap:fault name="getIRPVersionFault" use="literal"/>
            </fault>
        </operation>
        <operation name="getOperationProfile">
            <soap:operation
soapAction="http://www.3gpp.org/ftp/Specs/archive/32_series/32.667/schema/32667-
710/getOperationProfile"/>
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="getOperationProfileFault">
                <soap:fault name="getOperationProfileFault" use="literal"/>
            </fault>
```

```
        </operation>
        <operation name="getNotificationProfile">
            <soap:operation
soapAction="http://www.3gpp.org/ftp/Specs/archive/32_series/32.667/schema/32667-
710/getNotificationProfile"/>
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="getNotificationProfileFault">
                <soap:fault name="getNotificationProfileFault" use="literal"/>
            </fault>
        </operation>
        <operation name="getNRMIRPVersion">
            <soap:operation
soapAction="http://www.3gpp.org/ftp/Specs/archive/32_series/32.667/schema/32667-
710/getNRMIRPVersion"/>
            <input>
                <soap:body use="literal"/>
            </input>
            <output>
                <soap:body use="literal"/>
            </output>
            <fault name="getNRMIRPVersionFault">
                <soap:fault name="getNRMIRPVersionFault" use="literal"/>
            </fault>
        </operation>
    </binding>
    <service name="KernelCMIRP">
        <port name="KernelCMIRP" binding="kernelCMIRPSystem:KernelCMIRP">
            <soap:address location="To be defined."/>
        </port>
    </service>
</definitions>
```

Annex B (informative): Kernel CM IRP WSDL/XML schema electronic files

The electronic files corresponding to the normative WSDL/XML schema defined in the present document are available in native form in the following archive:

http://www.3gpp.org/ftp/Specs/archive/32_series/32667/schema/32667-710-wsdl.zip

Annex C (informative): Change history

Change history								
Date	**TSG #**	**TSG Doc.**	**CR**	**R**	**Subject/Comment**	**Cat**	**Old**	**New**
Mar 2006	SA_31	SP-060097	--	--	Submitted to TSG SA#31 for Information	--	1.0.0	--
Dec 2006	SA_34	SP-060740	--	--	Submitted to TSG SA#34 for Approval	--	2.0.0	7.0.0
Mar 2007	--	--	--	--	Delete reference to the 32.664 CMIP SS. Reason: SA#35 endorsed the SA5 decision to not propagate the CMIP Solution Sets to Rel-7 (TS 32.3x4, TS 32.4x4, TS 32.6x4)	--	7.0.0	7.0.1
Jun 2007	--	--	--	--	Changed TS Title. Reason: SOAP does not stand anymore for "Simple Object Access Protocol"	--	7.0.1	7.0.2
Dec 2008	SA_42	SP-080845	0001	-	Incorrect URI specified in TS 32.667 (both word document and corresponding wsdl file)	F	7.0.2	7.1.0

History

Document history		
V7.0.1	March 2007	Publication
V7.0.2	June 2007	Publication
V7.1.0	January 2009	Publication